

## Crossland, Ronnie

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**From:** Mohr, Ashley  
**Sent:** Friday, January 09, 2015 11:43 AM  
**To:** Crossland, Ronnie  
**Cc:** Delgado, Paige; Fife, Greg  
**Subject:** BangBox Emission Factors

Ronnie,

I have reached out to Dr. Kirgan regarding BangBox derived emission factors, as well as, one my fellow modelers to see if they may be able to share any additional information regarding the applicability of these emission factors to real world open burning. Meanwhile, I did come across the attached EPA document dated August 1998 that has some discussion regarding OB/OD emission factor development. I wanted to share with you and point out the following excerpt from the document (page 17-18 of PDF):

In 1988, the United States Army initiated a second study which had two major objectives: (1) to determine if toxic or hazardous pollutants were released when energetic materials were detonated or burned; and (2) to determine if emission factors produced by detonating and burning small quantities of energetic materials in large chambers containing ambient air would provide emission factors equivalent to those determined when large quantities of energetic materials were open-detonated and open-burned in the ambient air in the unconfined state.

...

Based on their review of the test results, the U.S. Army concluded that the emission factors derived from the BangBox tests were: (1) more reliable and reproducible than those from the field tests; (2) were statistically equivalent to those determined from the field tests; and (3) supported the original assumption that the detonations and burns were producing emission products consistent with detonation theory. For example, the CO<sub>2</sub> and CO emission factors derived from the

Obviously, additional research/discussion is needed to confirm that the information in the 1998 document is still appropriate and if it would apply to all energetic materials, including M6 (I did not see a specific reference to M6 being evaluated in the 1988 study). I found the document via Google Search, which is available on the Strategic Environmental Research and Development Program-Environmental Security Technology Certification Program (SERDP-ESTCP) webpage: <https://www.serdp-estcp.org/content/download/6069/82228/file/CP-251-FR-01.pdf>.

According to their website, SERDP and ESTCP are DOD's environmental research programs. Not sure if Superfund may have contacts within these programs that may be able to provide additional insight or if there is a chance that there is someone in RTP that might be able to weigh-in.

Again, just wanted to share this information to provide potential contacts for additional feedback for developing a response to the public inquiry. BTW... I did look at the model documentation regarding the emission factor development and it only cites the source but does not really provide any information regarding how they are expected to compare

with real world applications. I will let you know if hear back from my two contacts. Let me know if I can help with anything else.

Thanks,

*Ashley*

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Ashley N.Q. Mohr  
Environmental Scientist  
Air Permits Section (6PD-R)  
U.S. Environmental Protection Agency  
1445 Ross Avenue  
Dallas, TX 75202  
(214) 665-7289  
FAX (214) 665-6762  
[mohr.ashley@epa.gov](mailto:mohr.ashley@epa.gov)

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